

**DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(MPDES)**

Fact Sheet

Permittee: M2Green Redevelopment

Permit No.: MT0000035

Receiving Water: Clark Fork River

Facility Information:

Name M2Green Redevelopment Wastewater Treatment System

Location 14377 Pulp Mill Road, Missoula MT 59808

Facility Contact: Neal Marxer
14377 Pulp Mill Road, Missoula MT 59808
406-626-5293

Fee Information:

Number of Outfalls 2 (for fee determination purposes)
Outfall – Type 001 – Major privately owned treatment works
002 –
003 –
004 – Non-contact cooling water (fee)
005 – Major privately owned treatment works (fee)

I. Permit Status

This is a renewal of the Montana Pollutant Discharge Elimination System (MPDES) permit for the wastewater treatment system at the M2Green Redevelopment Frenchtown site, formerly the Stone Container Corporation Frenchtown Mill. The current permit was effective on September 1, 2000, and expired on May 31, 2005. The previous permittee, Stone Container Corporation (SC), submitted an MPDES renewal application and fees in November, 2004. DEQ deemed that application complete in March, 2005, and the permit was administratively extended until the issuance of a new permit.

In November, 2009, DEQ requested that SC submit an updated application. In January 2010, SC announced the impending closure of the facility. SC met with DEQ staff and expressed their desire to maintain all relevant environmental permits for the site. DEQ instructed SC to continue with the submission of an updated application. That application was received on January 25, 2010. Because the facility was no longer operating and the future of the site was uncertain, DEQ did not take immediate action on this updated application.

In 2011 the site was sold by SC, and in June 2011 DEQ received a request to transfer the MPDES permit to the new owner, M2Green Redevelopment, LLC. The permit was transferred on June 16, 2011. Because a condition of the sale required that the site no longer be used as a paper mill, DEQ requested an updated application from M2Green Redevelopment (M2Green) that accurately reflected the expected uses, wastewater treatment, and proposed discharges at the site. DEQ received an updated application on September 14, 2011, and issued a deficiency notice on November 8, 2011. Because the facility and site no longer discharged process wastewater and the only activities occurring at the site were for demolition of the previous facility, DEQ granted M2Green an extended time to respond to the application deficiencies. M2Green submitted an updated application on May 10, 2012, and DEQ issued another notice of deficiency on May 29, 2012. M2Green responded to the notice of deficiency on June 29, 2012, and DEQ found the application complete on July 20, 2012.

The current permit, originally issued in September 2000, remains administratively extended and M2Green is responsible for compliance with all requirements of the permit until a renewed permit is issued.

II. Facility Information

A. Facility and Site Description

The site is the former location of an integrated pulp and paper mill that manufactured linerboard from 1957 until the mill's closure in 2010. After the closure of the mill, various government officials and local citizens expressed concerns that historic contamination might remain at the site. In response to these concerns, the United States Environmental Protection Agency (EPA) conducted a preliminary assessment and site investigation to identify any historical contamination subject to cleanup under the federal superfund regulations. On May 21, 2013, EPA proposed adding the site to the Superfund National Priorities List. A 60-day public comment period began on May 23, 2013.

This permit renewal does not address these areas of historic contamination. Any necessary cleanup and remediation will be addressed by EPA and Montana DEQ's Remediation Division.

The mill ceased operations in January 2010. All discharges of process wastewater ended shortly thereafter. The discharge of non-contact cooling water at Outfall 004 has continued. However, because boiler operations have ceased, the discharge at Outfall 004 is no longer cooling water, but the discharge of unaltered ground water from the site's production wells. This discharge has been maintained to keep water in a large wetland; primarily for migratory bird habitat. Nonetheless, the permit application lists Outfall 004 as a non-contact cooling water discharge and it will be treated as such in this permit renewal.

As previously stated, SC sold the site to M2Green in 2011. Since the sale of the property, all of the paper making equipment and most of the other industrial components of the facility have been removed or demolished. Most of the buildings on the site have been, or soon will be, removed as well. M2Green is in the planning phase to develop an industrial complex that could house multiple tenants. At this time, the permit application lists manufacturing of wind powered turbine generator units, SIC code 3511, as the primary industrial category.

The previous wastewater treatment system for the paper mill, which consists of an interceptor ditch/equalization (EQ) basin, clarifier, and unlined aeration ponds, remains in place. Also, a series of large unlined ponds for the storage of wastewater occupy approximately 600 acres of the site.

Wastewater from the industrial complex will consist of domestic wastes from employee restrooms and showers. M2Green proposes to use the EQ basin and the clarifier from the existing wastewater treatment system. An influent screen, aeration basin with anoxic zone, and ultraviolet disinfection will be added to these existing components to provide secondary treatment. An aerobic digester and screw press will be added to handle solids. The proposed design capacity of the wastewater treatment system is for an average flow of 26,000 gallons per day (gpd), with a projected maximum of 96,000 gpd. A schematic of the proposed treatment system is presented in Figure 1.

The permit application indicates that discharge of treated wastewater will be into the storage ponds. Direct discharge to the river will only occur from the ponds if they are at or near capacity. The current permit includes three outfalls for direct discharge from the storage ponds to the river. The permittee has requested these outfalls be continued in this permit renewal. These outfalls are designated 001, 002 and 003. Water quality based effluent limits and monitoring requirements will apply at these locations.

The initial discharge from the treatment system into the storage ponds will be designated Outfall 005 in this permit renewal. Outfall 005 will discharge into an approximately 10 acre unlined pond referred to in previous permits as the south polishing pond (SPP) (Neal Marxer, May 8, 2013 personal communication). The SPP has a total capacity of approximately 50 acre feet. It is unknown, given the small volume of the proposed discharge and the unknown rate of infiltration, if this pond will ever fill to capacity. If the south polishing pond reaches capacity, the overflow will be directed to an effluent ditch and into Pond 1.

Technology-based effluent limits, water quality-based effluent limits for protection of ground water and seepage to the river, and associated monitoring will apply at Outfall 005. All outfall locations are shown in Figure 2.

This permit renewal is for the discharge of treated domestic sewage from Outfalls 001, 002, 003, and 005, and for non-contact cooling water at Outfall 004. The discharge of industrial process wastewater is not authorized by this permit.

B. Effluent Characteristics

Outfalls 001, 002, 003, and 005

The proposed discharge is for domestic wastewater. The wastewater treatment system has yet to be constructed and no discharge has occurred. Estimated effluent characteristics were provided on application form 2E and are considered representative of domestic sewage receiving the type of treatment proposed.

Outfall 004

Outfall 004 is for the discharge of non-contact cooling water. Effluent characteristics from the facility DMR forms for the period of record from January 1, 2009, to present are summarized in Table 1.

<i>Table 1: Effluent Characteristics, Outfall 004</i>			
Parameter	Units	Maximum Value	Average Value
Flow	cfs	14.7	6.1
pH	S. U.	10	7.4
Temperature	° F	83	54

C. Compliance History

DEQ conducted compliance inspections in 2008, 2009, 2010, and 2012. No violations were noted during any of these inspections.

Violation letters were issued to Stone Container during 2009 and 2010 for the following:

November 2009 – Failure to report temperature on DMR form RIV-A
February 2010 – Permit limit exceedance for Whole Effluent Toxicity (WET)

The permittee returned to compliance by correctly reporting the temperature on subsequent DMR forms, and by passing subsequent WET tests.

After the permit transfer to M2Green, the permittee was issued violation letters on multiple occasions for failing to submit quarterly WET DMR forms. Since the site did not have an active

discharge, the permittee returned to compliance by submitting the missing forms and indicating "no discharge".

III. Technology-Based Effluent Limits (TBELs)

Clean Water Act (CWA) section 402(a)(1) (33 U.S.C. 1342(a)(1)) and ARM 17.30.1203 require that permits contain TBELs that implement the technology-based treatment requirements specified in the CWA. These technology-based requirements may be national technology standards for existing sources or new sources established by EPA pursuant to Section 304 of the CWA, or, in some cases, standards established by the permit writer on a case-by-case basis.

The M2Green wastewater treatment system will treat domestic wastes from employee restrooms and showers. Most domestic waste is treated in publicly-owned treatment works (POTW). POTW is defined in ARM 17.30.1304(48). ARM 17.30.1203(2) establishes technology-based treatment requirements and effluent limitations for POTWs based on secondary treatment as defined in 40 CFR Part 133. These requirements do not apply specifically to non-POTW facilities, and no other effluent guidelines are promulgated for non-POTWs discharging treated domestic wastewater.

ARM 17.30.1203(1) requires that all permits contain, at a minimum, technology based controls. In the absence of promulgated effluent limitation guidelines, ARM 17.30.1203(5)(b) grants DEQ authority to impose technology-based treatment requirements on a case-by-case basis using best professional judgment (BPJ). In establishing case-by-case limitations the permit writer must consider the factors listed in ARM 17.30.1203(6).

The effluent characteristics from the proposed M2Green wastewater treatment system discharge, and the treatment process itself, are expected to be equivalent to those of a similarly-sized POTW. For this reason, DEQ finds that the secondary treatment requirements of 40 CFR Part 133 are appropriate for this facility as BPJ effluent limitations, and as such satisfy the requirements of ARM 17.30.1203(6).

TBELs are shown in Table 2. Compliance with the TBELs must be achieved prior to treated effluent mixing with other waste streams or ground water [ARM 17.30.1203(8)]. TBEL monitoring must occur at Outfall 005, prior to discharge to the SPP.

5-day Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) loading limits are calculated from the TBELs and the treatment system average design flow.

Table 2. Technology-based Effluent Limits – Outfall 005			
Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45
	lb/day	6.5	9.8
Total Suspended Solids (TSS)	mg/L	30	45
	lb/day	6.5	9.8
BOD ₅ , Percent Removal	%	85 ⁽²⁾	--
TSS, Percent Removal	%	85 ⁽²⁾	
pH	S.U.	In the range of 6.0 – 9.0	
Footnotes:			
1. See Definition section at end of permit for explanation of terms.			
2. Monthly average minimum.			

ELGs and TBELs for non-contact cooling water discharged at Outfall 004 have not been promulgated. The current permit contains effluent limits for temperature and pH at Outfall 004. These limits will be continued in this permit renewal.

Nondegradation

This is an existing facility and is not a new or increased source, as defined in ARM 17.30.702(18), and therefore is not subject to the criteria in ARM 17.30.715(1).

Previous permits for this site included nondegradation-based load limits for BOD₅ and TSS. These limits were 2,100,000 lb/year, and 2,500,000 lb/year respectively and were based on 1986 loading rates. The load limits for TSS and BOD₅ proposed in this renewal are significantly reduced from these previous limits and are not subject to the provisions of the Montana nondegradation policy.

IV. Water Quality- Based Effluent Limits (WQBELs)

A. Scope and Authority

The Montana Water Quality Act (Act) states that a permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters, 75-5-401(2), Montana Code Annotated (MCA). Montana water quality standards at ARM 17.30.637(2) require that no wastes may be discharged such that the waste, either alone or in combination with other wastes, will violate, or can reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 which states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards. The purpose of this section is to provide

a basis and rationale for establishing any necessary effluent limits, based on Montana water quality standards, which will protect designated uses of the receiving stream.

B. Receiving Water

The receiving water is the Clark Fork River. The Clark Fork River in this reach is classified as B-1 according to Montana Water Use Classifications, ARM 17.30.607. Waters classified B-1 are to be maintained suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

The Clark Fork River is located within the Middle Clark Fork River watershed as identified by the United States Geological Survey (USGS) Hydrological Unit Code 17010204. The Montana stream segment identification number is MT76M001_020, which is described as the reach from Fish Creek to Rattlesnake Creek.

This segment of the river is listed on the 2012 303(d) list of impaired streams as not supporting the drinking water beneficial use, and partially supporting the aquatic life and primary contact recreation beneficial uses. Probable causes listed are copper, cadmium, chlorophyll-a, arsenic, total nitrogen, total phosphorus, and organic enrichment (sewage) biological indicators. On the 1996 303(d) list this segment is listed as impaired for metals, nutrients, and organic enrichment/DO. Probable sources are listed as municipal and industrial point source discharges and mill tailings. A TMDL was completed for nitrogen, phosphorus, organic enrichment, and chlorophyll-a. A TMDL for the metals is pending.

The nearest USGS gaging station is 12353000 – Clark Fork River below Missoula, MT. The low flow expected to occur over 7 consecutive days in any ten year period (7Q10) at this site is 911 cubic feet per second (cfs), or 589 mgd. This flow will be used to assess the need for and establish water quality-based effluent limits (WQBEL), where necessary. For nutrients, the 14Q10 (1,020 cfs) is used.

Recent water quality data for the Clark Fork River upstream of the facility and downstream of the confluence with the Bitterroot River is limited. The most recent data available for this reach of the Clark Fork River is from permit-required nutrient monitoring conducted by the permittee from 2007 to 2012. STORET Data collected between 2000 and 2009 is included for pH, temperature, and dissolved oxygen.

A summary of the receiving water data is shown in Table 3. DEQ uses the 75th percentile of the data as the ambient condition to calculate pH and temperature dependent standards, to determine the receiving stream assimilative capacity, and to assess reasonable potential. In some cases (hardness) the 25th percentile is used.

Table 3: Clark Fork River Characteristics				
Parameter	Units	25th Percentile	75 th Percentile	No. of Samples
pH	S.U.	8.1	8.5	43
Temperature	° C	5.5	15.8	47
Dissolved Oxygen	mg/L	9.0	11.8	36
Nitrogen, total as N ⁽¹⁾	mg/L	0.21	0.33	34
Phosphorus, total as P ⁽¹⁾	mg/L	0.015	0.04	35
Ammonia, total as N	mg/L	0.01	0.01	118
Nitrate, as N	mg/L	0.01	0.06	118
1. Seasonal data from June through September each year.				

C. Applicable Water Quality Standards

ARM 17.30.623(2) states that discharges to waters classified B-1 may not violate the specific water quality standards listed under ARM 17.30.623(2)(a through k). In addition, discharges are subject to ARM 17.30.635 through 637, 641, 645, and 646.

Nutrient standards for the Clark Fork River, from the confluence with the Blackfoot River to the confluence with the Flathead River, are found in ARM 17.30.631(2)(b).

Effluent limitations must be based on the nutrient standards above, and the applicable standards in department Circular DEQ-7. Effluent limitations must ensure the receiving water concentrations do not exceed the standards when stream flows equal or exceed the design flows specified in ARM 17.30.635(2) [ARM 623(2)(i)].

D. Mixing Zone

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded [ARM 17.30.502(6)]. The Board has adopted rules governing the granting of mixing zones in surface and ground water at ARM 17.30.501-518. The rules require DEQ to determine the applicability of currently granted mixing zones in the permit renewal process [ARM 17.30.505(1)]. Mixing zones allowed under a permit issued prior to April 29, 1993 will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses [ARM 17.30.505(1)(c)]. Discharges that do not conform to the criteria of ARM 17.30.501-518 are deemed to be causing impairment and are therefore subject to review and modification.

Acute Mixing Zones

Acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless DEQ specifically finds that allowing minimal initial dilution will not threaten or impair existing uses [ARM 17.30.507(1)(b)]. An acute mixing zone (zone of initial dilution) is not granted for any toxic or persistent substances [ARM 17.30.506(1)(d)] unless the discharger demonstrates

complete and rapid mixing. Complete and rapid mixing is demonstrated through the use of an effective effluent diffuser. To prevent acute lethality in the mixing zone, no more than 10% of the chronic mixing zone may be allowed for acute mixing and no acute mixing zone may be granted for acute whole effluent toxicity.

Chronic and Human Health Mixing Zones

DEQ may grant a mixing zone for numeric chronic aquatic life, human health, and other narrative water quality standards given in department Circular DEQ-7 and nondegradation criteria given in ARM 17.30.715. A mixing zone may also be granted for chronic whole effluent toxicity. Chronic mixing zones (CMZ) are based on the design flow of the receiving water specified in ARM 17.30.635 and Part IV.B of this fact sheet. For discharges to flowing rivers and streams, the design condition is the 7Q10.

For purposes of calculating water quality-based effluent limits, the mixing zone is equated with a dilution allowance (i.e. a percentage of critical low flow) or dilution ratio. ARM 17.30.516(3) defines dilution ratios as the 7Q10 of the stream segment without the discharge divided by the flow of the discharge. The length of the mixing zone is the distance from the point of discharge, to the end of the mixing zone where all applicable water quality standards are met. The length of the mixing zone and dilution ratio must be the smallest practicable size and have minimal effect on uses. The length of the mixing zone must be specified in the permit.

Mixing Zone Determination – Outfalls 001, 002, and 003

The previous permit granted a mixing zone for color that extended approximately 12 miles downstream. However, the facility is no longer operated as a paper mill and the associated process waste streams no longer exist. The previous mixing zone is not necessary and will not be continued in this permit renewal.

The permittee requested a standard mixing zone, but did not specify what, if any, parameters in the discharge might require a mixing zone and did not submit the information necessary to determine the shortest possible length of the mixing zone as required by ARM 17.30.516(4). Therefore, a standard mixing zone cannot be granted.

The only pollutants in the proposed discharge expected to require a mixing zone are total ammonia and nitrate. DEQ typically grants an alternative mixing zone for total ammonia. The alternative mixing zone allows 10% of the receiving stream 7Q10 for dilution to meet chronic standards and 1% to meet acute standards. The reasonable potential assessment for ammonia and nitrate in this Fact Sheet applied this alternative mixing zone and found no reasonable potential to exceed the standards at the end of the mixing zone. Limits are not proposed. However, because the concentrations of these pollutants could exceed the standards at the point of discharge, prior to dilution in the receiving water, a mixing zone is necessary. The alternative mixing zone for total ammonia and nitrate shall extend 200 feet downstream of each outfall. 200 feet was selected as the mixing zone length based on the 10 stream width definition of a standard mixing zone found at ARM 17.30.516(4). 200 feet is approximately 10% of that standard mixing zone length for this section of the Clark Fork River.

Outfall 004

No specific mixing zone was delineated in the current permit for the Outfall 004 temperature discharge. According to the April 2000 Statement of Basis for the current permit, the 95° F temperature limit was based on the maximum observed Outfall 004 flow and temperature, and mixing with the entire 7Q10 of the Clark Fork River, which approximates a standard mixing zone. In

this permit renewal DEQ is defining the length of this mixing zone using the 10 stream width definition at ARM 17.30.516(4). The standard mixing zone length is 2,000 feet. The mixing zone for temperature at Outfall 004 shall extend 2,000 feet downstream from the outfall.

Ground Water Mixing Zone – Outfall 005

The current permit required a mixing zone study to define the boundaries of the ground water mixing zone. The study was to identify the area where total dissolved solids (TDS) concentrations exceeded 500 mg/L. The mixing zone study submitted by SC indicated that the ground water mixing zone is generally confined to the property boundaries.

Because conditions in the ground water have changed since the facility ceased discharge to the wastewater storage ponds, and DEQ has no new information regarding ground water volume and flow characteristics, a more specific ground water mixing zone cannot be granted. The shallow alluvial aquifer under the facility is separated from the deeper aquifer by 120 to 150 feet of fine-grained Lake Missoula sediments. DEQ does not anticipate any impact to down gradient domestic wells, all of which are more than two miles from the point of discharge and are finished in the deeper aquifer. The ground water mixing zone authorized by DEQ is the area of the shallow aquifer bounded by the property lines and the Clark Fork River.

E. Basis for WQBELs

ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any standard. Water quality-based effluent limits are developed for pollutants of concern that have a reasonable potential to cause or contribute to an exceedance of a water quality standard in the receiving water. Pollutants of concern include any parameter with a technology-based effluent limit, a TMDL defined wasteload allocation or impairment, and those identified through monitoring or otherwise potentially present in the discharge. Pollutants of concern for outfalls 001, 002, 003, and 005, include BOD₅, TSS, pH, oil and grease, *E. coli*, copper, cadmium, arsenic, total nitrogen, and total phosphorus. Pollutants of concern for Outfall 004 include pH and temperature.

DEQ uses a mass balance equation (*Equation 1*) and the methods outlined in the *Technical Support Document for Water Quality-based Toxics Control, EPA 1991*, (TSD) to determine reasonable potential. *Equation 1* utilizes the receiving water concentrations, the maximum projected effluent concentrations, the applicable discharge flow rate, and the applicable receiving water flow.

The maximum projected effluent concentration is calculated by multiplying the highest observed effluent concentration by the appropriate reasonable potential multiplier in Chapter 3 of the TSD. This multiplier is based upon the coefficient of variation (CV) for the data set and is used to account for effluent variability. Where there are 10 or more values in the data set, DEQ calculates the CV by dividing the standard deviation by the mean. Where there are fewer than 10 values, or if all values are non-quantified, DEQ uses a CV of 0.6. Where there is a mix of quantified and non-quantified values, either a CV of 0.6 is used or the CV is calculated using the methods described in TSD appendix E (Delta-Lognormal Distribution).

Reasonable Potential (RP) for the discharge to cause an exceedance of the water quality standard exists where C_r in *Equation 1* below exceeds the applicable standard.

Equation 1:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_d + Q_s}$$

Where:

C_r = the resulting receiving water concentration

Q_d = discharge flow rate, 0.026 mgd (chronic and human health), 0.096 mgd (acute)

Q_s = available portion of the receiving water 7Q10 flow for mixing

C_d = the projected maximum effluent concentration, 95% confidence level, 95% probability basis (TSD, pg. 52-54)

C_s = Applicable Clark Fork River 75th percentile ambient concentration

TSS, BOD₅, and pH

Outfalls 001, 002, 003, 005

The proposed treatment system will provide a reduction of biological materials and solids through secondary treatment (see Part III.). Additional WQBEL for TSS, and BOD₅, are not required.

The TBELs limit discharges from Outfall 005 to a pH in the range of 6.0 to 9.0 s.u. DEQ considers the TBELs protective of the water quality standard and additional WQBELs are not necessary at these outfalls.

Outfall 004

At Outfall 004 the current permit includes a WQBEL on pH in the range of 6.0 to 9.0. Lacking any information that this effluent limit has negatively affected beneficial uses or caused an exceedance of the water quality standard, the limit will be carried forward in this permit renewal.

Monitoring for compliance with the pH limit shall occur at the point of discharge into the cooling ditch.

Oil and Grease

ARM 17.30.637(1) states that State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will create visible oil film, or be present at or in excess of 10 mg/L.

The permit application lists the average oil and grease concentration in the discharge as 6 mg/L (estimated). The maximum is estimated as less than 10 mg/L. However, using the TSD method to calculate the projected maximum concentration (CV=0.6, n=10) from the reported average yields 10.2 mg/L. The projected maximum concentration is greater than the standard. The discharge has reasonable potential to exceed the water quality standard and an effluent limit is necessary.

The permit will include a 10 mg/L daily maximum limit on oil and grease. Monitoring will be required monthly. The effluent limit will be applied at the point of discharge into the ponds at Outfall 005.

Outfall 004

Outfall 004 consists of non-contact cooling water. Neither effluent limits nor monitoring is proposed at this location.

Escherichia coli (E. coli)

The standards for *E. coli* for the Clark Fork River apply year-round. The applicable standards are:

- 1) April 1 through October 31, of each year, the geometric mean number of *E. coli* may not exceed 126 colony forming units (cfu) per 100 milliliters (ml), nor are 10% of the total samples during any 30-day period to exceed 252 cfu per 100 ml [ARM 17.30.623(2)(a)(i)]; and
- 2) November 1 through March 31, of each year, the mean number of *E. coli* may not exceed 630 cfu per 100 ml and 10% of the samples during any 30-day period may not exceed 1,260 cfu per 100 ml [ARM 17.30.623(2)(a)(ii)].

The human health standard for *E. coli* in ground water is less than 1 colony forming unit per 100 ml.

To ensure protection of human health, effluent limits for *E. coli* are routinely included in permits for facilities discharging treated domestic wastes. The surface water standards above will be used as 30-day geometric mean and 7-day geometric mean permit limits. Monitoring will be required monthly. The WQBEL will be applied at Outfall 005 to ensure the surface water quality standards are met and to prevent the discharge of untreated effluent to ground water.

Applying the limits at Outfall 005 will protect the ground water standard because the ground water flow path is believed to be toward the river and confined to the facility property boundaries, which coincides with the ground water mixing zone. The nearest water supply wells potentially in this flow path are located more than two miles down gradient from the discharge. The discharge will seep into the shallow alluvial aquifer, which is separated from the deeper aquifer where these water supply wells are located by 120 to 150 feet of fine grained Lake Missoula sediments.

Outfall 004

Outfall 004 consists of non-contact cooling water. *E. coli* is not expected to be present. Neither effluent limits nor monitoring for *E. coli* are proposed at this location.

Total Residual Chlorine

Outfalls 001, 002, 003, 005

The DEQ-7 chronic and acute standards for total residual chlorine (TRC) are 0.011 and 0.019 mg/L, respectively.

M2Green is proposing to use ultraviolet light disinfection. TRC WQBELs are likely unnecessary. The permit will include TRC limits that are effective only if M2Green uses chlorine for disinfection.

The limits will be set at the water quality standard and applied at the point of discharge at Outfall 005. Applying the limits at Outfall 005 will also ensure the 4 mg/L ground water standard is achieved. Any monitoring results less than a detection limit of 0.1 mg/L will be considered in compliance with the WQBEL.

Outfall 004

Outfall 004 consists of non-contact cooling water. Neither effluent limits nor monitoring for TRC are proposed at this discharge location.

Total Ammonia as Nitrogen (N)

Outfalls 001, 002, and 003

Water quality standards for total ammonia as N are calculated based on receiving water temperature and pH, and the presence or absence of salmonid fishes. The 75th percentiles of pH and temperature values from Table 3 were used to calculate the applicable ammonia standards, and are shown in Table 4.

Table 4. Water Quality Standards for Ammonia, salmonids present				
Parameter	Units	Aquatic Life Standards		Human Health Standards
		Acute	Chronic	
Ammonia, total as N	mg/L	2.1	1.0	--

When assessing RP and developing ammonia limits at other facilities discharging treated domestic wastewater, DEQ typically allows an alternative mixing zone for ammonia [ARM 17.30.515(d)]. These alternative mixing zones grant 10% of the receiving water 7Q10 for dilution to meet the chronic standard and 1% of the 7Q10 to meet the acute standard; 59 mgd and 5.9 mgd, respectively.

The estimated maximum ammonia concentration reported on the permit application is 4 mg/L. Following the TSD, the maximum projected effluent concentration is 24.8 mg/L (CV = 0.6, n = 1). Applying *Equation 1*, $C_r = 0.02$ mg/L (chronic) and 0.4 mg/L (acute). Neither value exceeds the water quality standards. WQBEL are not necessary at this time.

Because the ammonia concentrations in the permit application are estimates, the permit will require routine effluent monitoring for total ammonia to confirm the accuracy of the estimated values.

Outfall 005

The discharge does not have RP to exceed the surface water quality standards. There are no standards for ammonia in ground water.

No effluent limits are proposed at Outfall 005. Monitoring will be required to characterize the effluent ammonia concentrations.

Outfall 004

Ammonia is not expected to be present in the Outfall 004 discharge. Neither monitoring nor effluent limits are proposed for this location.

Nutrients

Outfalls 001, 002, and 003

The numeric water quality standards for nutrients in the Clark Fork River from the confluence with the Blackfoot River to the confluence with the Flathead River are:

Total Phosphorus as P	39 µg/L
Total Nitrogen as N	300 µg/L

The nutrient standards are applicable from June 21 to September 21 each year.

The Clark Fork River is impaired for nutrients and an approved TMDL is in place. The direct discharge TMDL wasteload allocation (WLA) for nutrients from the M2Green facility is zero. The WLA applies from June 21 to September 21 of each year. 75-5-703(6)(b) MCA and ARM 17.30.1344(1) require DEQ to incorporate an approved TMDL WLA into MPDES permits.

Because the proposed treatment system cannot produce an effluent that will have zero nutrient content, the permit will prohibit direct discharge from Outfalls 001, 002, and 003, from June 21 to September 21 each year. During the remainder of the year, the permit will require monitoring for total phosphorus and total nitrogen (nitrite plus nitrate, and total kjeldahl nitrogen) at these outfalls.

Outfall 005

The TMDL WLA allows the discharge, via seepage, of 51 lb/day total phosphorus and 66 lb/day total nitrogen. The WLA applies from June 21 to September 21 each year.

Lacking information regarding current ground water conditions, the permit will incorporate the TMDL WLAs for nitrogen and phosphorus, via seepage, as effluent load limits at the point of discharge into the south polishing pond (SPP). To further account for the uncertainty surrounding ground water flow direction and travel times to the river, the limits will apply year round. Discharge to the SPP will satisfy the TMDL recommendation to discharge into the storage ponds located farthest from the river.

Outfall 004

Neither effluent limits nor monitoring for nutrients are proposed for this outfall.

Nitrate + Nitrite

Outfalls 001, 002, and 003

The human health standard in surface water is 10 mg/L.

The estimated maximum concentration on the permit application is 7.5 mg/L. The TSD projected maximum effluent concentration is 46.5 mg/L (CV = 0.6, n = 1). Using the same dilution allowance as applied for ammonia (10% of 7Q10; 59 mgd), and following *Equation 1*, $C_r = 0.08$ mg/L, which is well below the standard. An effluent limit for nitrate + nitrite is not necessary.

The permit will require monitoring to confirm the accuracy of the estimated values on the application.

Outfall 005

The human health standard in ground water is 10 mg/L.

The highest nitrate result recorded in any of the monitoring wells is 1.76 mg/L. Most results are less than 0.1 mg/L. The former ground water mixing zone for the facility encompassed most of the area within the property boundaries. DEQ does not expect nitrate levels from seepage to exceed the water quality standard outside of this area.

Additional limits based on the ground water quality standards are not proposed because the shallow alluvial aquifer where seepage takes place is separated from the deeper aquifer used for most water supply in the area by a layer of fine grained Lake Missoula sediments that is 120 to 150 feet thick (Hydrometrics and Inskeep, 2004). Also, the direction of ground water flow in the shallow aquifer is understood to be generally toward the river and is confined to the facility property boundaries. While there are domestic water supply wells located downgradient to the north, these wells are over two miles from the proposed discharge point and are all completed in the deeper aquifer.

The permit will require nitrate monitoring in the effluent at Outfall 005 and additional nitrate monitoring in the monitoring wells. Monitoring will also be required in additional wells located near the north property boundary.

Outfall 004

Neither effluent limits nor monitoring for nitrate are proposed for this outfall.

Temperature

Outfalls 001, 002, and 003

The dilution ratio for direct discharge is more than 20,000:1. DEQ does not expect any significant effect on instream temperatures. Neither effluent limits nor monitoring for temperature are proposed for these outfalls.

Outfall 005

The discharge to the CFR is via seepage. The discharge is expected to reach the ambient temperature of the ground water prior to reaching the river, and temperature standards do not apply to the ground water. Neither effluent limits nor monitoring for temperature are proposed for this outfall.

Outfall 004

Temperature is the primary pollutant of concern in non-contact cooling water discharges. The previous permit included a temperature limit of 95 degrees Fahrenheit as an instantaneous maximum. The permit further specified that the discharge must consist entirely of uncontaminated cooling water. The cooling ditch is approximately three miles long and provides significant time for cooling to occur prior to discharge to the receiving water. Lacking any information that the current temperature limitation has had a negative effect on beneficial uses in the receiving water, or caused an exceedance of the water quality standard, DEQ proposes to continue the temperature limit in this renewal. Temperature monitoring shall occur at the end of the cooling ditch prior to mixing with the receiving water.

Dioxin, Furan, Arsenic, Manganese

EPA has proposed listing the site on the Superfund National Priorities List to address contamination from these parameters. While the proposed discharge is not expected to be a source of these contaminants, portions of the existing treatment system, which could be contaminated, will be used in the proposed treatment process. The permit will require effluent monitoring for dioxin, furan, arsenic, and manganese, at outfalls 001, 002, 003, and 005. Groundwater monitoring will also be required in the wells listed in Table 3, plus three additional SMW wells, SMW-7, SMW-8, and SMW-21, which are located near the northwest property boundary.

Copper, Cadmium

The Clark Fork River is listed as impaired for these parameters. The proposed discharge is not expected to be a source of these contaminants. The permit will require monitoring for copper and cadmium at Outfall 005.

Whole Effluent Toxicity

The facility is for the treatment of domestic waste and the facility design flow is less than 0.1 mgd. WET testing is not proposed.

V. Effluent Limits

A. Final Limits effective from permit effective date until permit expiration.

Outfalls 001, 002, and 003

There shall be no discharge which causes visible oil sheen in the receiving stream.

No discharge may occur from Outfalls 001, 002, or 003 from June 21 to September 21 of each year.

Outfall 005			
Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾
Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45
	lb/day	6.5	9.8
Total Suspended Solids (TSS)	mg/L	30	45
	lb/day	6.5	9.8
BOD ₅ , Percent Removal	%	85 ⁽²⁾	--
TSS, Percent Removal	%	85 ⁽²⁾	--
pH	S.U.	In the range of 6.0 to 9.0	
Chlorine, total residual ⁽³⁾	mg/L	0.011	0.019
<i>Escherichia coli</i> (<i>E. Coli</i>) Bacteria ⁽⁴⁾	cfu/100 mL	126	252
<i>Escherichia coli</i> (<i>E. Coli</i>) Bacteria ⁽⁵⁾	cfu/100 mL	630	1260
Oil and Grease	mg/L	--	10 ⁽⁶⁾
Total Nitrogen	lb/day	--	66 ⁽⁷⁾
Total Phosphorus	lb/day	--	51 ⁽⁷⁾
Footnotes: 1. See Definition section at end of permit for explanation of terms. 2. Average monthly minimum. 3. This limit only applies if chlorine is used for disinfection. Sampling results less than 0.1 mg/L are considered in compliance with this limit. 4. This limit applies April 1 through October 31. 5. This limit applies November 1 through March 31. 6. Daily maximum. 7. Daily maximum. Effective June 21 to September 21 each year.			

Outfall 004			
Parameter	Units	Average Monthly Limit ⁽¹⁾	Daily Maximum Limit ⁽¹⁾
pH	S.U.	In the range of 6.0 to 9.0	
Temperature	° F	--	95
Footnotes:			
1. See Definition section at end of permit for explanation of terms.			

The discharge from Outfall 004 must consist entirely of uncontaminated non-contact cooling water or unaltered ground water.

VI. Monitoring Requirements

A. Influent/Effluent Monitoring

Effluent monitoring location must be after all treatment processes and prior to mixing with the receiving water. At Outfall 005, the monitoring location must be after treatment and prior to discharge to the SPP. The influent monitoring location must be prior to the EQ Basin.

Monitoring Requirements, Outfalls 001, 002, and 003					
Parameter	Unit	Sample Location	Sample Frequency	Sample Type ¹	RRV ²
Flow	mgd	Effluent	Continuous	(3)	---
pH	s.u.	Effluent	1/Week	Instantaneous	0.1
Oil and Grease, visual	presence	Effluent	Daily	Visual	---
Total Ammonia, as N	mg/L	Effluent	1/Month	Composite	0.05
Nitrate + Nitrite, as N	mg/L	Effluent	1/Month	Composite	0.01
Kjeldahl Nitrogen, Total as N	mg/L	Effluent	1/Month	Composite	0.5
Phosphorus, Total as P	mg/L	Effluent	1/Month	Composite	0.001
	lb/day	Effluent	1/Month	Calculated	---
Nitrogen, Total as N ⁽⁴⁾	mg/L	Effluent	1/Month	Calculated	---
	lb/day	Effluent	1/Month	Calculated	---
2,3,7,8 TCDD ⁽⁵⁾	µg/L	Effluent	1/Year	Grab	5×10^{-8}
Arsenic, Total Recoverable	µg/L	Effluent	1/Year	Grab	1
Copper, Total Recoverable	µg/L	Effluent	1/Year	Grab	2
Cadmium, Total Recoverable	ug/L	Effluent	1/Year	Grab	0.03
Manganese, Total Recoverable	µg/L	Effluent	1/Year	Grab	0.01
Footnotes:					
1. See Definition section at end of permit for explanation of terms.					
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department.					
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.					
4. Calculated as the sum of Nitrate plus Nitrite and Total Kjeldahl Nitrogen.					
5. Use EPA method 1613 Revision B.					

Monitoring Requirements, Outfall 005					
Parameter	Unit	Sample Location	Sample Frequency	Sample Type ¹	RRV ²
Flow	mgd	Effluent	Continuous	(3)	---
Biochemical Oxygen Demand (BOD ₅)	mg/L	Effluent	1/Week	Composite	5
	lb/day	Effluent	1/Month	Calculated	---
	mg/L	Influent	1/Month	Composite	5
Total Suspended Solids (TSS)	mg/L	Effluent	1/Week	Composite	5
	lb/day	Effluent	1/Month	Calculated	---
	mg/L	Influent	1/Month	Composite	5
pH	s.u.	Effluent	1/Week	Instantaneous	0.1
<i>E. coli</i> Bacteria	cfu/100ml	Effluent	1/Week	Grab	1/100 mL
Chlorine, total residual ⁽⁴⁾	mg/L	Effluent	Daily	Grab	0.1
Oil and Grease ⁽⁵⁾	mg/L	Effluent	1/Month	Grab	1
Total Ammonia, as N	mg/L	Effluent	1/Month	Composite	0.05
Nitrate + Nitrite, as N	mg/L	Effluent	1/Month	Composite	0.01
Kjeldahl Nitrogen, Total as N	mg/L	Effluent	1/Month	Composite	0.5
Phosphorus, Total as P	mg/L	Effluent	1/Month	Composite	0.001
	lb/day	Effluent	1/Month	Calculated	---
Nitrogen, Total as N ⁽⁶⁾	mg/L	Effluent	1/Month	Calculated	---
	lb/day	Effluent	1/Month	Calculated	---
2,3,7,8 TCDD ⁽⁷⁾	µg/L	Effluent	1/Year	Grab	5 x 10 ⁻⁸
Arsenic, Total Recoverable	µg/L	Effluent	1/Year	Grab	1
Copper, Total Recoverable	µg/L	Effluent	1/Year	Grab	2
Cadmium, Total Recoverable	ug/L	Effluent	1/Year	Grab	0.03
Manganese, Total Recoverable	µg/L	Effluent	1/Year	Grab	0.01
Footnotes: 1. See Definition section at end of permit for explanation of terms. 2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. 3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR. 4. Monitoring is only required when chlorine is used for disinfection. 5. Use EPA method 1664A, hexane extractable. 6. Calculated as the sum of Nitrate plus Nitrite and Total Kjeldahl Nitrogen 7. Use EPA method 1613 Revision B					

At Outfall 004, flow and temperature must be monitored at the outfall location, prior to mixing with the receiving water; pH shall be monitored where the cooling water enters the cooling ditch.

Monitoring Requirements, Outfall 004					
Parameter	Unit	Sample Location	Sample Frequency	Sample Type ¹	RRV ²
Flow	mgd	Effluent	Continuous	(3)	---
Temperature	° F	Effluent	Daily	Instantaneous	---
pH	S.U.	Effluent	Daily	Instantaneous	---

Footnotes:

1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department.
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.

B. Ground Water Monitoring

The monitoring wells specified in the following table must be monitored for the parameters listed at the specified frequency. The wells and locations are shown in Figure 2.

Groundwater Monitoring Requirements SMW Wells 7, 8, 9, 10, 11, 12, 13, 14, 21 TW Wells 1R, 2R, 4R, 5R, 514				
Parameter	Unit	Sample Frequency	Sample Type ¹	RRV ²
Nitrate + Nitrite, as N	mg/L	1/Quarter	Grab	0.01
Kjeldahl Nitrogen, Total as N	mg/L	1/Quarter	Grab	0.5
Phosphorus, Total as P	mg/L	1/Quarter	Grab	0.001
Nitrogen, Total as N ⁽³⁾	mg/L	1/Quarter	Calculated	---
2,3,7,8 TCDD ⁽⁴⁾	µg/L	1/Year	Grab	5 x 10 ⁻⁸
Arsenic, Total Recoverable	µg/L	1/Year	Grab	1
Manganese, Total Recoverable	mg/L	1/Year	Grab	0.01

Footnotes:

1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department.
3. Calculated as the sum of Nitrate plus Nitrite and Total Kjeldahl Nitrogen
4. Use EPA Method 1613, Revision B

VII. Special Conditions

Not applicable

VIII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new permits or increases under the MPDES program. The order was issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and Missoula Division. The renewal of this permit does not conflict with Judge Molloy's order because this is not a new or increased discharge under MPDES and an approved TMDL WLA is implemented in the permit.

IX. Information Sources

Federal Regulations at 40 CFR, Parts 122, 133, 136.

Montana Statute, "Montana Water Quality Act", Title 75-5-101 et seq., Montana Code Annotated (MCA).

Administrative Rules of Montana (ARM) at:

- 17.30.501-518. Mixing Zones in Surface and Ground Water. September 2010.
occu
- 17.30.601-670. Montana Surface Water Quality Standards. March 2013.
- 17.30.701-718. Nondegradation of Water Quality. July 2010.
- 17.30.1201-1213, 17.30.1301-1387. Montana Pollutant Discharge Elimination System (MPDES). April 2012.

DEQ. Circular 7 Montana Numeric Water Quality Standards. October 2012.

Inskeep, William P. Contributions of Seepage N and P to Total Discharge Rates From Stone Container Corporation's Effluent Storage Ponds in the Clark Fork River. September 1992.

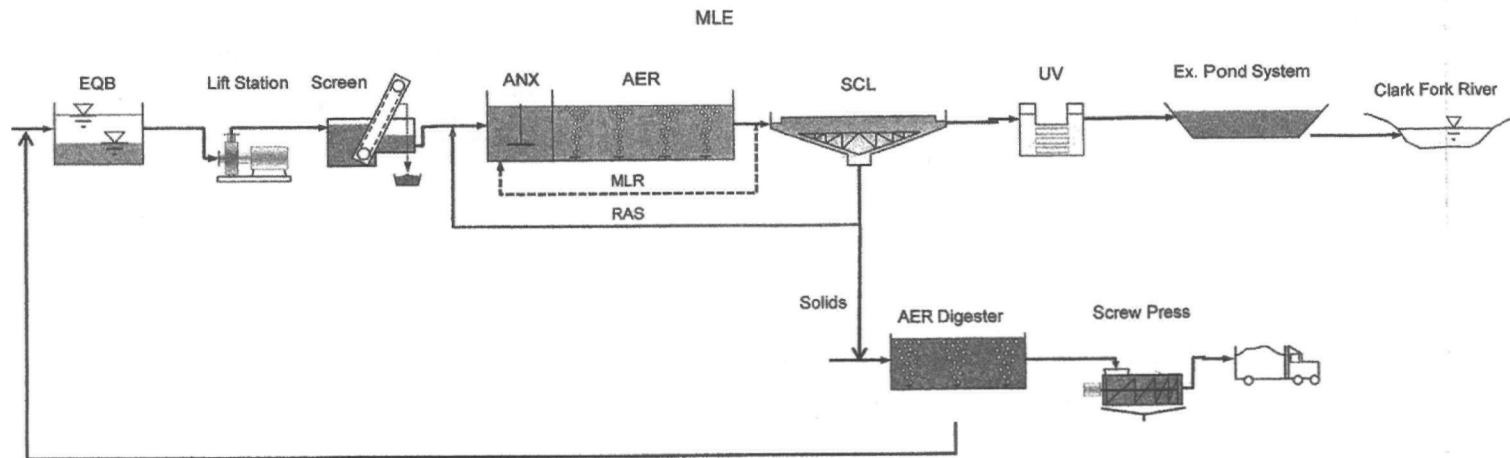
Hydrometrics, Inc. and Inskeep, William. Groundwater Mixing Zone Investigation and Well Correlation Study, Stone Container Missoula Facility. November 2004.

Administrative Record for MDPES Permit MT0000035

Prepared by: Jeff May
June 2013

Figure 1

M2 Green Wastewater Treatment Process Schematic



Treatment Process	Size per unit	Quantity
EQ Basin	Existing	1
Pumps	26,000 gallons per day (average)	2
Screen	26,000 gallons per day (average)	1 (w/ 1 manual redundant)
Anoxic capacity	2,500 gallons	2
Aeration capacity	12,500 gallons	2
Clarifier	45 square feet	1
UV disinfection	26,000 gallons per day (average)	2
Digester	5,000 cubic feet	1
Screw press	Existing	1

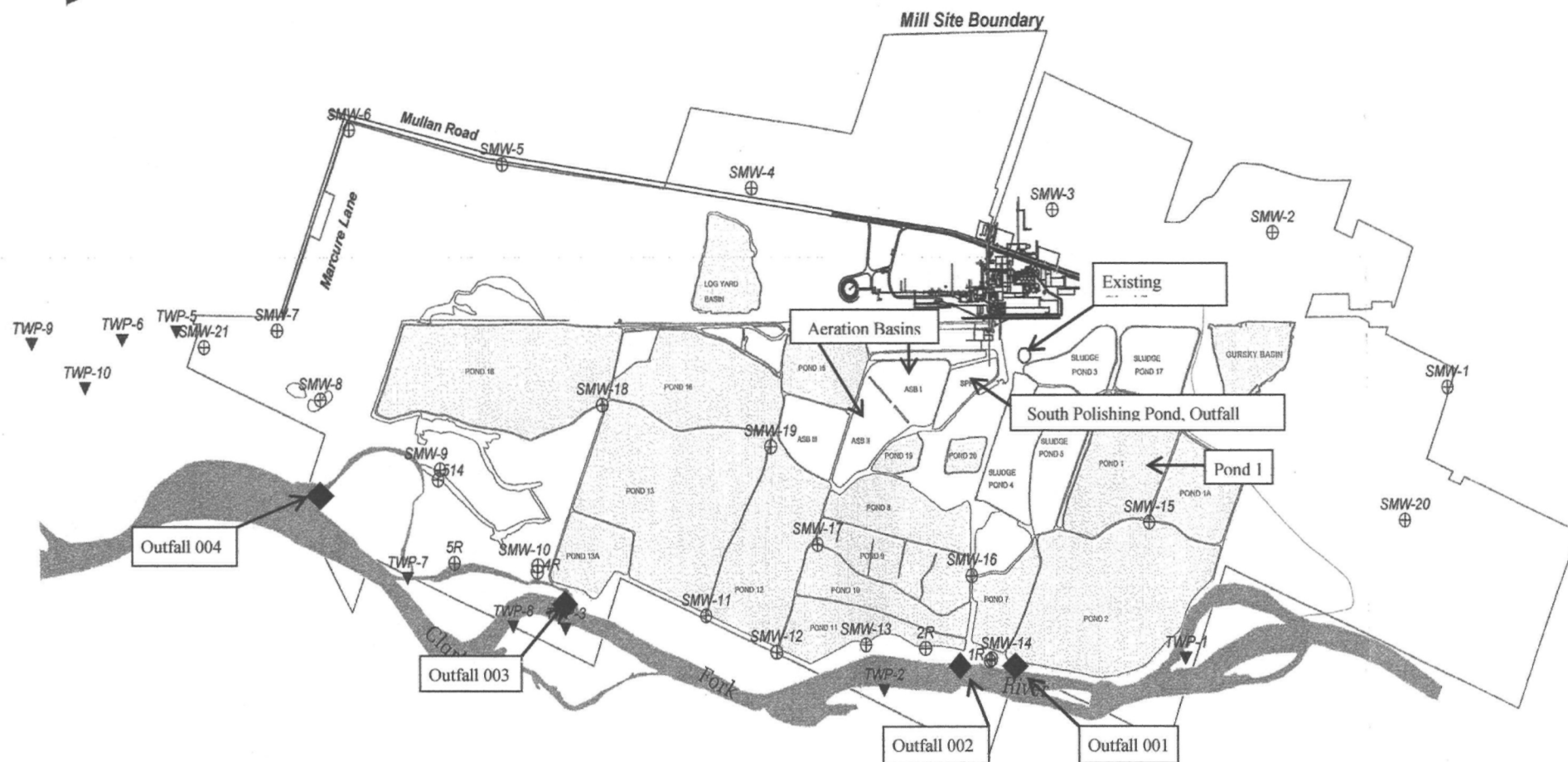
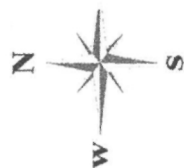


Figure 2
Facility Area Map
Outfall and Monitoring Well Locations